emonHP – Level 2 OpenEnergyMonitor Heatpump Monitoring

Pre-provisioned hardware package for Level 2 Heat Pump Monitoring.

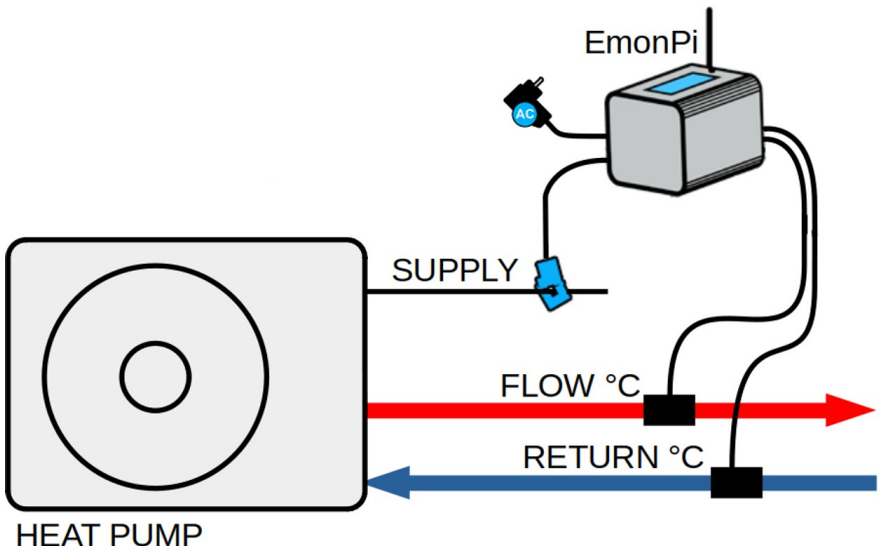
Level 2 heat pump monitoring measures the electrical input and temperatures of the flow and return pipes. This enables data logging of the heat pump operation for optimisation and diagnostic purposes.

Note: accurate heat output and COP calculation is not possible with Level 2 monitoring.

The monitoring system is web-connected with remote data access available via **emoncms.org.**

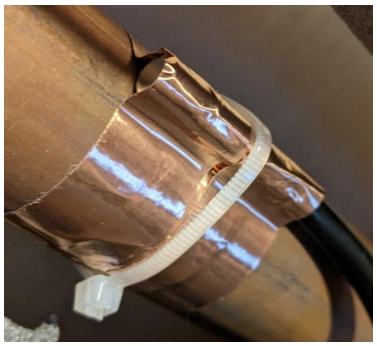
Kit of parts

- emonPi2 Energy Monitor
- emonVS voltage sensing power supply
- 50A clip-on CT sensor for **outdoor** ASHP
- 20A clip-on CT sensor for **indoor** controller (and or immersion)
- 20A clip on CT sensor for **DHW** diverter valve (to determine heating mode)
- 2x wired temp sensors (flow & return)
- Pipe attachment kit (copper tape, thermal paste & zip-tie)
- Indoor wireless temp sensor (optional)



Install Temperature Sensors

It's important that the temperature sensors have a good attachment to the primary Flow and Return pipes:



- Ensure pipes are clean
- Apply thermal compound to the pipe
- Attach sensor to pipe using copper tape and/or copper wire around the sensor to make a tight contact with good thermal transfer
- Secure sensor with a ziptie
- Apply pipe insulation over the sensor

- The sensors are digital, therefore the cables can be extended using any three-core flex without any loss of accuracy
- *Additional temperature sensors can be connected if required (DS128B20)*

Attach Clip-on CT Current Sensors

The CT sensors are used to measure the electrical power, the CT sensors must be **clipped around only the Live conductor**, NOT Live and Neutral. The CT sensors can be located anywhere along the supply cable where the live and neutral conductors are separated, convenient locations include: fuse board, inside rotary isolator, inside outdoor or indoor unit, junction box etc.

The CT sensors must be plugged into the emonPi as follows:

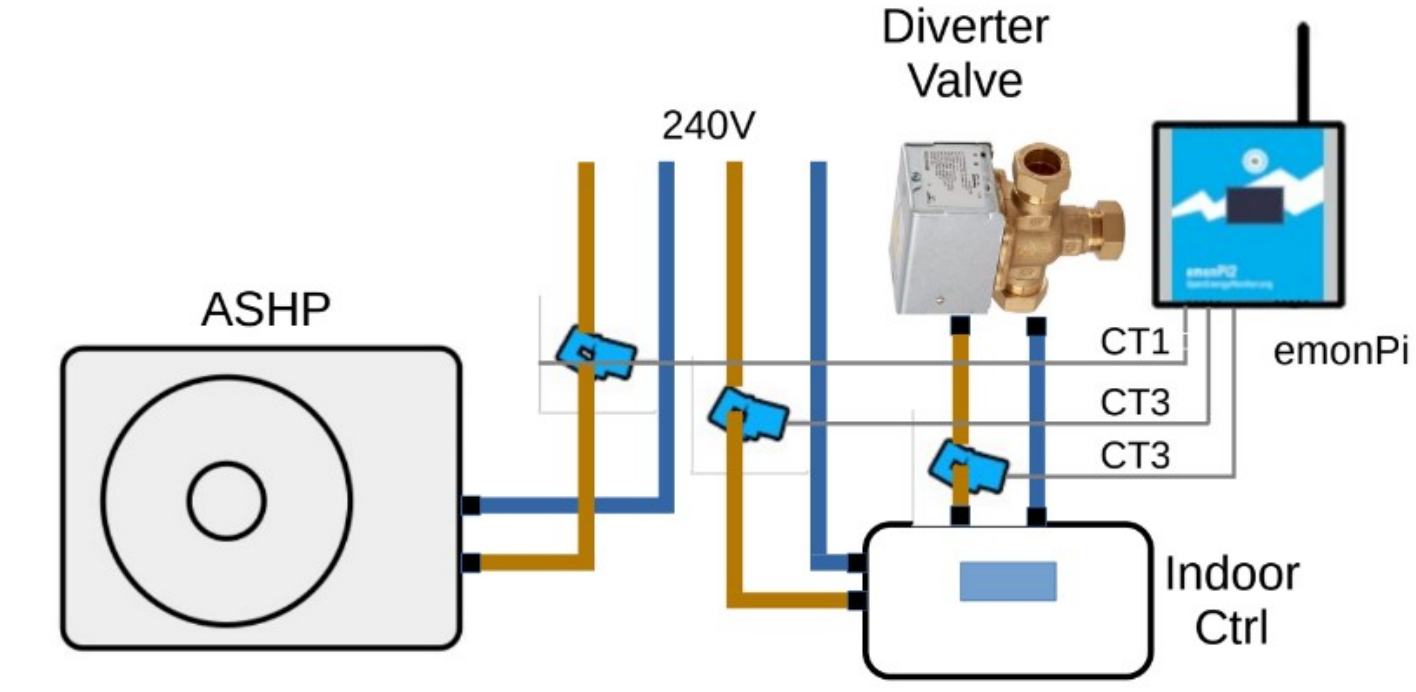
- CT 1: Outdoor ASHP unit (50A sensor)
- CT 2: Indoor controller which should include power used by additional plump(s) (20A sensor)
- CT 3: DHW Diverter valve – see below
- **IMPORTANT: CT sensors should be orientated so that the L arrow points towards the Load e.g ASHP**
- Extending cables: The CT's can be extended if needed, standard two core flex can be used for short extensions, longer extensions should use screened cable, see: https://docs.openenergymonitor.org/electricity-monitoring/ct-sensors/extending-ct-cable.html
- Wireless monitoring: An emonTx can be used to monitor power in another location in the property, the emonTx will transmit the power data via wireless to the emonPi: https://shop.openenergymonitor.com/emontx5-6-channel-energy-monitoring-transmitter-node

DHW 3-port Diverter Valve CT Sensor

The emonPi can monitor the position of the diverter valve to determine when the heat pump is heating DHW:

- Plug the clip on CT sensor jack plug into **CT3 connection on the emonPi**
- Clip the CT current sensor around the **Live wire which controls the diverter valve**. If there are multiple live wires e.g Switched Live & Permanent Live, clip the CT around both live cables. It's usually convenient to locate the CT sensor inside the heat pump controller

Important: The CT sensor must be clipped around only the live conductor(s), **do not clip the CT sensor around the flex cable which contains both Live and Neutral conductors**.



emonPi Data logger Installation

The emonPi data logger reads and decodes data from both the electricity and heat meters and logs data to emoncms.org. It's essential that the emonPi has a reliable connection to the internet, **we recommend using wired Ethernet**.

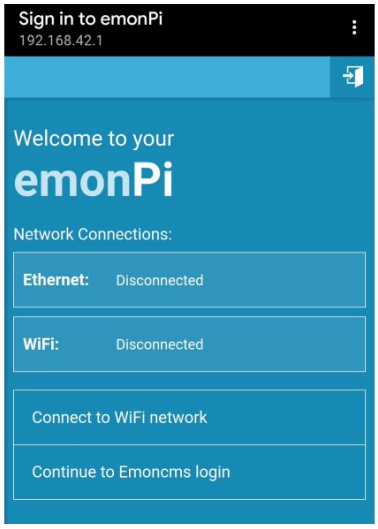
The emonPi is powered by the emonVS voltage sensing power supply, which is also used to provide an AC voltage sample. The emonVS should be plugged into the emonPi using the supplied RJ45 cable.

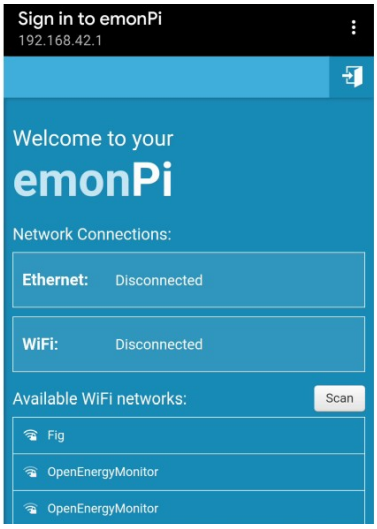
Important: the emonPi has got two RJ45 sockets, ensure the emonVS is plugged into the one labeled emonVS, the other is Ethernet.

Wi-Fi Operation (not recommended)

*If WiFi credentials were provided when the kit was purchased the Wi-Fi will be **pre-provisioned and will automatically connect**. If not follow the instructions below:*

1. Using a smartphone connect to Wi-Fi Access Point '**emonPi'** with password '**emonpi2016'**
2. The captive portal should bring up the Wi-Fi configuration interface
3. Select "Connect to WiFi network", select your WiFi network name then enter password, then 'Connect'
4. After a few moments it should display 'Connected', the WiFi connection status is also shown on the emonPi LCD display, use button to scroll through options





To change the WiFi network the LCD display can be used to re-enable the emonPi WiFi Access Point. See:

https://docs.openenergymonitor.org/emonpi2/install.html

If required the local login details are as follows:

Local hostname: http://emonhp.local

Local username: emonhp

Local password: emonhp

Cloud Portal: emoncms.org

The emonPi datalogger is pre-provisioned to log data to the emoncms.org account with username as provided when kit was purchased.

To view the Heat Pump Monitor App Dashboard **scan the QR code on the emonPi** Or login to the account on emoncms.org and select Apps > MyHeatPump.

Support

Tell: **01286 800870** | Email: **support@openenergymonitor.zendesk.com** | Forum: **community.openenergymonitor.org**